

Crises and Confidence: Systemic Banking Crises and Depositor Behavior*

On-Line Appendix

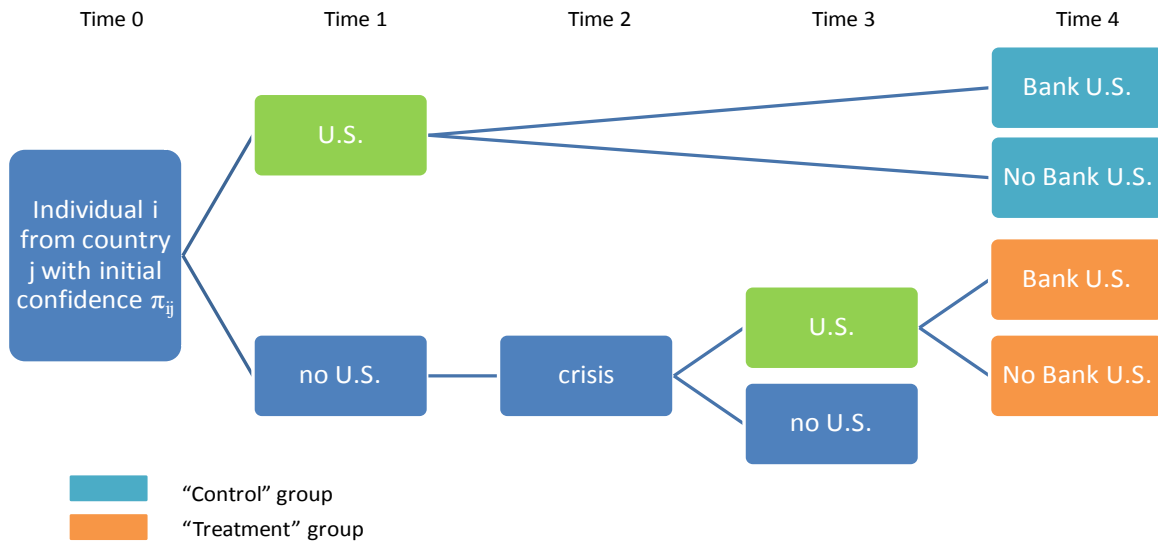
Una Okonkwo Osili
Indiana University-Purdue University at Indianapolis

Anna Paulson
Federal Reserve Bank of Chicago

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Figure 1: Data Generating Process for a Country that Experiences a Crisis



**Appendix Table 1: Systemic banking crises,
Crises beginning 1975 – 1995**

	Country	Year(s) of Banking Crisis		Country	Year(s) of Banking Crisis
1	Afghanistan	None	41	Iran	None
2	Argentina	1980–82, 1989-90, 1995	42	Iraq	None
3	Australia	None	43	Israel	1977–83
4	Bahamas	None	44	Italy	None
5	Bangladesh	1987–96	45	Jamaica	None
6	Barbados	None	46	Japan	1992–2001
7	Belgium	None	47	Jordan	None
8	Belize	None	48	South Korea	None
9	Bolivia	1986–88, 1994-1995	49	Laos	None
10	Brazil	1990, 1994-99	50	Lebanon	1988–90
11	Burma	None	51	Malaysia	None
12	Cambodia	None	52	Mexico	1981–91, 1994-2000
13	Canada	None	53	Morocco	1980-1983
14	Chile	1976, 1981-83	54	New Zealand	None
15	China	None	55	Nicaragua	1987-1989
16	Colombia	1982–87	56	Nigeria	1991–95
17	Costa Rica	1994–96	57	Norway	1990–93
18	Cuba	None	58	Pakistan	None
19	Czechoslovakia	None	59	Panama	1988–89
20	Dominica	None	60	Peru	1983–90
21	Dominican Republic	None	61	Philippines	1983–87
22	Ecuador	1980-1983	62	Poland	1992–95
23	Egypt	1980-1983	63	Portugal	None
24	El Salvador	1989	64	Romania	1990–96
25	Ethiopia	None	65	Singapore	None
26	Fiji	None	66	South Africa	None
27	Finland	1991–94	67	Spain	1977–85
28	France	None	68	Sweden	1991–94
29	Germany	None	69	Switzerland	None
30	Ghana	1982–89	70	Syria	None
31	Greece	None	71	Taiwan	None
32	Guatemala	None	72	Thailand	1983–87
33	Guyana	None	73	Trinidad & Tobago	None
34	Haiti	None	74	Turkey	1982–85
35	Holland	None	75	UK	None
36	Honduras	None	76	Uruguay	1981–84
37	Hong Kong	None	77	USSR	None
38	Hungary	1991–95	78	Venezuela	1994–95
39	India	None	79	Vietnam	None
40	Ireland	None	80	Yugoslavia	None

Source: Honohan and Laeven (2005).

Appendix Table 2: Definitions and sources of country and crisis variables

Variable	Definition and Source
Systemic Banking Crisis	An indicator variable equal to one if a country experienced a systemic banking crisis that between 1975 and 1995 and zero otherwise. Banking crises are defined to be systemic if non-performing assets reached at least 10% of total assets at the peak of the crisis, if the cost of rescue operations was at least 2% of GDP, if emergency measures (bank holidays, deposit freezes, blanket guarantees to depositors or other bank creditors) were taken, or if large-scale nationalizations took place. Source: Honohan and Laeven (2005).
Experienced a Systemic Banking Crisis	An indicator variable equal to one if an individual has experienced a systemic banking crisis prior to coming to the U.S and zero otherwise. Source: authors' calculations using 1996 SIPP data and information from Honohan and Laeven (2005).
Age at beginning of Systemic Banking Crisis	Equal to an individual's age at the beginning of the first systemic banking crisis they experienced prior to coming to the U.S. Equal to zero for individuals who did not experience a crisis. Source: authors' calculations using 1996 SIPP data and information from Honohan and Laeven (2005).
Experienced a Recession, Experienced a Recession between ages 18 and 25	Indicator variable equal to one if an individual experienced at least one year in their country of origin when real per capita GDP growth (in 1996 dollars) was less than the 5 th percentile of real per capita GDP growth between 1955 and 1995 and zero otherwise. For the second measure, the variable is equal to one if the recession year occurred when the individual was 18 – 25 years old and zero otherwise. For some countries, fewer years of GDP data are available. Source: authors' calculations using 1996 SIPP data and data from the Penn World Tables.
Deposit Insurance in place before the crisis, Deposit Insurance enacted after the crisis.	An indicator variable equal to one if a country had formal regulation requiring deposit insurance through central bank law, banking law, or the country's constitution before a systemic banking crisis and zero otherwise. An indicator variable equal to one if a country enacted formal regulation requiring deposit insurance through central bank law, banking law, or the country's constitution following a systemic banking crisis and zero otherwise. Source: Demirgüç-Kunt, Kane and Laeven (2008).
Average Real GDP per capita	A broad measure of economic development. It is calculated as the average of real GDP per capita in 2000 dollars over the period from 1975 to 1995. For some countries, fewer years of GDP data are available. Source: authors' calculations using World Development Indicators data.
Private Credit	A broad measure of financial intermediary development. It is calculated as the value of credits by financial intermediaries to the private sector divided by GDP. Source: Beck, Demirgüç-Kunt, and Levine (2000).
Bank Branches per 100,000 people	Number of bank branches per 100,000 people. Source: Beck, Demirguc-Kunt and Peria (2007).
KKZ Index	A composite of six governance indicators from 1998: voice and accountability, political stability, government effectiveness, regulatory quality, rule of law, and corruption. Higher values correspond to better governance. Source: Kaufman, Kray and Zoido-Lobaton, (1999).
Trust in upper 1/3 rd	An indicator variable equal to one for countries whose average response to a question about trust in the European or World Values Survey is in the upper third of the trust distribution and zero otherwise. For each country, the fraction of respondents who answer the question “Generally speaking, would you say that most people can be trusted, or that you can't be too careful in dealing with people?” with “Most people can be trusted” is calculated. This calculation is performed for countries where European or World Value Surveys were completed between 1981 and 2004. Source: authors' calculations using data from European and World Value Survey data.

Appendix Table 3:
Do Migration patterns to the U.S. change when the sending country has a crisis?
Estimates of annual migration flows to the U.S.

Data on inflows of foreign-born nationals admitted for lawful permanent residence (LPR) in the United States from 1980 to 2008 were obtained from the Department of Homeland Security's (DHS) Office of Immigration Statistics (OIS). Annual flows of nonimmigrant arrivals from 1991 to 2008 by country include all foreign nationals that enter the U.S. for a specific purpose (tourists, business travelers, students, temporary workers) and are obtained from the DHS's *Yearbook of Immigration Statistics*. The 80 countries that are represented in the SIPP data are included in the analysis. An OLS regression model is used and standard errors are corrected for heteroskedasticity and clustering at the country level. Standard errors are in parentheses. *** indicates significance at at least the 1% level, ** at at least the 5% level, * at at least the 10% level.

Dependent Variable	[1] Lawful Permanent Resident Flows	[2] Nonimmigrant Arrivals	[3] Lawful Permanent Resident Flows	[4] Nonimmigrant Arrivals
Pre Crisis Period	-755.5 (550.7)	-14,716 (13,442)		
Post Crisis Period	-857.8 (527.0)	-5,635 (13,048)		
Crisis year minus 3			-1,241* (661.3)	1,675 (18,948)
Crisis year minus 2			-1,094* (616.7)	4,801 (17,557)
Crisis year minus 1			-767.5 (603.5)	10,917 (17,155)
Crisis Year			193.5 (585.5)	11,134 (15,488)
Crisis year Plus 1			-674.8 (586.0)	-904.8 (14,459)
Crisis year Plus 2			-337.3 (589.7)	1,256 (13,851)
Crisis year Plus 3			-38.28 (574.7)	4,868 (13,491)
Constant	7,388*** (1,949)	97,461*** (22,041)	6,326*** (184.1)	91,855*** (3,656)
Country Fixed Effects	Yes	Yes	Yes	Yes
Decade of Arrival Fixed Effects	Yes	Yes	Yes	Yes
Decade of Arrival * Country Fixed Effects	Yes	Yes		
Number of Observations	1,445	859	1,445	859
R-Squared	0.927	0.894	0.887	0.823

Appendix Table 4: The effect of control variables on having a checking account

The dependent variable is equal to one if the individual owns a checking account and is zero otherwise. The estimation sample includes Wave 3 observations from the 1996 SIPP. A linear probability model is used and standard errors are corrected for heteroskedasticity and clustering at the country-cohort level. Standard errors are in parentheses. In addition to those reported on here, regressions include controls for age, age squared, wealth quartiles, labor force status, income, income squared, marital status, sex, ethnicity, education, number of children, and county controls. The reported coefficients and standard errors of explanatory variables marked by a † are the actual ones multiplied by 100, by a †† are multiplied by 1,000,000. The lowest wealth quartile is the omitted wealth category, and the omitted education category is less than high school graduate. *** indicates significance at at least the 1% level, ** at at least the 5% level, * at at least the 10% level.

Explanatory Variable	
Age [†]	1.003*** (0.313)
Age Squared [†]	-0.013*** (0.003)
2 nd Wealth Quartile	0.148*** (0.022)
3 rd Wealth Quartile	0.158*** (0.038)
4 th Wealth Quartile	0.142*** (0.028)
Unemployed or Out of Labor Force	-0.075*** (0.022)
Per Capita Income ^{††}	16.8** (7.78)
Per Capita Income Squared ^{††}	-0.001*** (0.0002)
Male	-0.043*** (0.013)
Married	0.165*** (0.019)
Number of Children	-0.02*** (0.007)
Non-white	-0.052 (0.045)
High School Graduate	0.136*** (0.024)
Some College	0.185*** (0.025)
Bachelor Degree	0.251*** (0.033)
Advance Degree	0.313*** (0.041)
Experienced Banking Crisis	-0.110*** (0.028)
Constant	0.441*** (0.111)
County Fixed Effects	Yes
Adjusted R-Squared	0.3105
Number of Observations	3609
Number of Countries	80

Appendix Table 5: Potential alternative explanations: Banking crises or other factors?

The dependent variable is equal to one if the individual owns a checking account and is zero otherwise. The estimation sample includes Wave 3 observations from the 1996 SIPP. A linear probability model is used and standard errors are corrected for heteroskedasticity and clustering at the country-cohort level. Standard errors are in parentheses. In addition to those reported on here, regressions include controls for age, age squared, wealth quartiles, labor force status, income, income squared, marital status, sex, ethnicity, education, number of children, and county controls. See Appendix Table 2 for definitions of banking crises and other country level variables. In column [2], the sample is limited to permanent residents and U.S. citizens. In column [3], the sample is limited to those with wealth above the median for the entire (immigrant and non-immigrant) SIPP sample. In estimate [4] the placebo “experienced a banking crisis” variable is created by randomly assigning a placebo crisis date between 1975 and 1995 to the countries that actually experienced systemic crises during this period. For individuals who migrate prior to the placebo crisis date, the placebo crisis variable is equal to zero, for individuals who migrate after the placebo crisis date the variable is equal to one. To generate standard errors, this procedure is repeated for 500 randomly assigned crisis years. The reported standard error is the standard deviation of the resulting 500 coefficient estimates. *** indicates significance at at least the 1% level, ** at at least the 5% level, * at at least the 10% level.

Dependent Variable	[1] Checking Account Ownership (Baseline)	[2] Checking Account Ownership Permanent Residents and U.S. Citizens	[3] Checking Account Ownership Above Median Wealth	[4] Checking Account Ownership
Explanatory Variable				
Experienced Banking Crisis	-0.110*** (0.028)	-0.101*** (0.026)	-0.113* (0.066)	
Placebo “Experienced Banking Crisis”				-0.012 (0.039)
Country Fixed Effects	Yes	Yes	Yes	Yes
Adjusted R-Squared	0.3105	0.2979	0.2523	NA
Number of Observations	3609	2360	897	3609
Number of Countries	80	77	70	80

**Appendix Table 6: The role of age at banking crisis, Various specifications
estimates of the impact of age at banking crisis exposure on checking account ownership**

The dependent variable is equal to one if the individual owns a checking account and is zero otherwise. The estimation sample includes Wave 3 observations from the 1996 SIPP. A linear probability model is used and standard errors are corrected for heteroskedasticity and clustering at the country-cohort level. Standard errors are in parentheses. In addition to those reported on here, regressions include controls for age, age squared, wealth quartiles, labor force status, income, income squared, marital status, sex, ethnicity, education, number of children, and county controls. See Appendix Table 2 for definitions of banking crises and other country level variables. *** indicates significance at at least the 1% level, ** at at least the 5% level, * at at least the 10% level.

Dependent Variable	[1] Checking Account Ownership (Baseline)	[2] Checking Account Ownership linear	[3] Checking Account Ownership quadratic	[4] Checking Account Ownership Age Bins 1	[4] Checking Account Ownership Age Bins 2
Explanatory Variable					
Experienced Banking Crisis	-0.110*** (0.028)				
Age at beginning of Banking Crisis		-0.003*** (0.001)	-0.007*** (0.002)		
Age at Crisis Squared			0.000076 (0.0000050)		
Age at Crisis 0 – 10 years				-0.093** (0.042)	
Age at Crisis 11 – 16 years				-0.035 (0.029)	
Age at Crisis 17 – 24 years				-0.080** (0.032)	
Age at Crisis ≥ 25 years				-0.147*** (0.033)	
Age at Crisis 0 – 15 years					-0.070** (0.032)
Age at Crisis 16 – 25 years					-0.091** (0.039)
Age at Crisis 26 – 35 years					-0.192*** (0.045)
Age at Crisis 36 – 45 years					-0.138*** (0.053)
Age at Crisis ≥ 46 years					-0.123** (0.056)
Country Fixed Effects	Yes	Yes	Yes	Yes	Yes
Adjusted R-Squared	0.3105	0.3099	0.3104	0.3109	0.3114
Number of Observations	3609	3609	3609	3609	3609
Number of Countries	80	80	80	80	80

Appendix Table 7: Indirect exposure to banking crises

Estimates of checking account ownership and indirect exposure to banking crises

The dependent variable is equal to one if the individual owns a checking account and is zero otherwise. The estimation sample includes Wave 3 observations from the 1996 SIPP. A linear probability model is used and standard errors are corrected for heteroskedasticity and clustering at the country-cohort level. Standard errors are in parentheses. In addition to those reported on here, regressions include controls for age, age squared, wealth quartiles, labor force status, income, income squared, marital status, sex, ethnicity, education, number of children, and county controls. See Appendix Table 2 for definitions of banking crises and other country level variables. *** indicates significance at at least the 1% level, ** at at least the 5% level, * at at least the 10% level.

Dependent Variable	[1] Checking Account Ownership	[2] Checking Account Ownership	[3] Checking Account Ownership	[4] Checking Account Ownership
Explanatory Variable	(Baseline)			
Experienced Systemic Banking Crisis	-0.110*** (0.028)			
Experienced Non-systemic Banking Crisis		-0.003 (0.051)		
Systemic Banking Crisis in Bordering Country (while individual is living in Origin Country)			-0.029 (0.034)	
Systemic Banking Crisis in Origin Country (while individual is living in U.S.)				0.015 (0.020)
Country Fixed Effects	Yes	Yes	Yes	Yes
Adjusted R-Squared	0.3105	0.3059	0.3060	0.2413
Number of Observations	3609	3609	3609	2211
Number of Countries	80	80	80	71

Appendix Table 8: The impact of banking crises on non-bank investment decisions

The dependent variable is equal to one if the individual owns a checking account and is zero otherwise (column [1]), equal to one if the individual owns stock (column [2]), equal to one if the individual has IRA or Keogh retirement savings (column [3]). The estimation sample includes Wave 3 observations from the 1996 SIPP. A linear probability model is used and standard errors are corrected for heteroskedasticity and clustering at the country-cohort level. Standard errors are in parentheses. In addition to those reported on here, regressions include controls for age, age squared, wealth quartiles, labor force status, income, income squared, marital status, sex, ethnicity, education, number of children, and county controls. High education immigrants are those with a bachelor's degree or more education. Low education immigrants are those with less than a high school degree. See Appendix Table I for definitions of banking crises and other country level variables. *** indicates significance at at least the 1% level, ** at at least the 5% level, * at at least the 10% level.

Dependent Variable	[1] Checking Account Ownership	[2] Stock Ownership	[3] IRA/Keogh Ownership
Explanatory Variable	(Baseline)		
Experienced Banking Crisis	-0.110*** (0.028)	0.0040 (0.006)	-0.009 (0.018)
Country Fixed Effects	Yes	Yes	Yes
Adjusted R-Squared	3609	3609	3609
Number of Observations	0.3105	0.2390	0.1966
Number of Countries	80	80	80